Appl. No. 10/559,864
Amendment dated January 8m 2010
Response to Office Action dated November 10, 2009

Attorney Docket No. Serie 6095

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claim 13 (currently amended):   A method for purifying a gas stream containing at least hydrogen (H_2), carbon monoxide (CO), at least one metal carbonyl and at least one impurity selected from oxygen (O_2) and unsaturated hydrocarbons, in which:

    (a)   the gas stream is contacted with a first adsorption bed to adsorb at least one metal carbonyl, thereby resulting in a partially purified gas stream, and

    (a) (b)   ~~the~~ said partially purified gas stream is contacted with a first catalyst bed comprising at least one catalyst containing copper, in order to convert at least part of the oxygen and/or at least one unsaturated hydrocarbon present in the gas stream to one or more catalysis products, at a temperature of between 100°C and 200°C and at a pressure of at least 10 bar~~; thereby resulting in a partially purified gas stream, and~~

    ~~(b)   said partially purified gas stream is contacted with a first adsorption bed to adsorb at least one metal carbonyl.~~

Claim 14 (previously presented)   The method of claim 13, wherein the temperature is between 120°C and 180°C and/or the pressure is between 10 and 18 bar.

Claim 15 (previously presented)   The method of claim 13, wherein said first catalyst bed and said first adsorption bed have an hourly space velocity, and wherein said gas hourly space velocity is between 1000 and 10000 $Sm^3/h/m^3$.

Claim 16 (previously presented)   The method of claim 13, wherein the gas stream also contains one or more organosulfur, organonitrogen and/or organochlorine compounds, and in that:

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 (c) the gas stream is contacted with a second catalyst bed to convert at least part of the organosulfur, organonitrogen and/or organochlorine compounds to organic compounds and to polar inorganic compounds; and

 (d) the gas stream is contacted with a third adsorption bed to adsorb at least part of the inorganic compounds produced in step (c).

Claim 17 (currently amended) The method of claim 13, wherein the gas stream also contains HCN impurities and/or at least one compound of an element selected from the group formed by mercury, sulfur, chlorine, arsenic, selenium, bromine and germanium, and in that:

 (e) said gas stream is contacted with a ~~the~~ first adsorption bed to adsorb at least part of the HCN impurities and/or at least one compound of at least one element selected from the group formed by mercury, sulfur, chlorine, arsenic, selenium, bromine and germanium.

Claim 18 (previously presented) The method of claim 13, wherein the gas stream also contains at least one nitrogen oxide (NO_x), and in that:

 (f) said gas stream is contacted with a third catalyst bed to convert at least one nitrogen oxide present in the gas stream.

Claim 19 (currently amended) The method of claim 18, wherein steps ~~(a)~~ (b) and (f) are distinct.

Claim 20 (currently amended) The method of claim 18, wherein steps ~~(a)~~ (b) and (f) are combined.

Claim 21 (currently amended) The method of claim 13, wherein in step ~~(a)~~ (b), at least part of the oxygen and/or at least one unsaturated hydrocarbon are converted to catalysis products selected from water vapor (H_2O), carbon dioxide (CO_2) and/or alkanes.

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Claim 22 (previously presented)   The method of claim 13, wherein the gas stream to be separated contains 10% by volume to 90% by volume of H_2, 10% by volume to 90% by volume of CO and, optionally, methane.

Claim 23 (currently amended)   The method of claim 18, wherein the gas stream issuing from one or the other of steps (a) (b) or (f) is contacted with a fourth adsorption bed to remove H_2O and/or CO_2 and/or optionally CH_3OH and/or hydrocarbons formed during the passages over the catalyst beds, and/or a scrubbing step to remove the CO_2 and/or the methanol therein, particularly an amine scrub.

Claim 24 (currently amended)   The method of claim 13, wherein the gas stream is subjected to at least one compression step upstream of step (a) (b) and in which all or part of the heat generated by the compression of the stream is used to reach the desired temperature.